

**County of Loudoun**  
**Department of Planning**  
**MEMORANDUM**

**DATE:** November 15, 2007

**TO:** Loudoun County Planning Commission

**FROM:** Nicole Steele  
Project Manager, Land Use Review

**SUBJECT:** November 20, 2007  
Planning Commission Committee of the Whole  
CMPT 2007-0005, SPEX 2007-0012 – CWS Taylorstown

**Background**

On September 17, 2007, the Planning Commission held a public hearing regarding five proposed telecommunication facilities to be located in the rural Loudoun County region. There were numerous speakers for each of these applications who spoke with some in support of the facilities and the majority with issues and/or opposed to the facilities. Concerns were raised regarding potential visual impact, health risks, property values, alternative services or locations and general need for the facilities.

Specific to the CWS – Taylorstown site; seven (7) members of the public commented on the application. Two (2) citizens supported the site, stating the need for public safety and business growth. Five (5) citizens opposed the site suggesting that there is not an additional need for service especially for Broadband uses. A number of the neighbors stated that they utilize existing Broadband services and are fearful that the new services provided on the tower would interfere with the existing, local providers. Other concerns were raised about the visual impact to the neighbors and questioned the effects on the surrounding property values.

The Commission asked questions of staff and the applicant, and requested additional information on other telecommunications applications under review by the County, and requested copies of the May 25, 2007 Atlantic Group study and inventory of telecommunication facilities.

The Planning Commission closed the public hearing for the applications and voted 8-0-1 (Syska absent) to send each of the telecommunications applications to a future committee for further discussion. In addition, the Commission requested that a telecommunications consultant be obtained to explain the telecommunications industry requirements and needs, radio frequency coverages and to generally answer questions from the County regarding consideration of the telecommunication requests proposed.

County staff contacted Scott Bashore with the County Department of Information Technology, who agreed to attend an October 1, 2007 Commission work session. George Condyles IV, President/COO of The Atlantic Group of Companies, Inc. had been contacted and agreed to attend this work session to summarize a May 25, 2007 telecommunication facilities study and answer questions. At the October 1 Commission meeting, the Commission received an overview of the telecommunications industry from George Condyles. The Commission expressed strong interest in having each telecommunications application reviewed by a technical consultant for further detailed recommendations and requested that the staff contract for such services.

The County contracted with the Atlantic Group on October 15, 2007 and received individual technical reviews for the pending telecommunication applications. Attached is the Taylorstown technical review.

## **Issues**

The following issues are identified from the September 17, 2007 Staff Report remain the same and are outlined below.

1. The applicant should provide letters of intent from the six proposed provider locations in order to justify the height on the monopole. The applicant has not provided any additional information regarding potential providers which justify the height of the tower.
2. The applicant should discuss with the landowners on Springhollow Lane if additional plantings are needed to mitigate the visual impact of the monopole from each of the residences. These plantings could be on or off-site. It is unknown to whether or not the applicant has had additional conversations with the residences on Springhollow Lane regarding these plantings.

The following issues are identified in the Atlantic Group study.

1. The Atlantic Group suggested that the applicant can meet their current stated coverage objectives at a height of 110-feet.
2. The Atlantic Group recommended an adjustment to the siting of the tower and compound in order to achieve a 750-foot setback from the

residence on the property. This recommendation is for all residential units to be a distance of 750-feet from the tower and compound.

3. The Atlantic Group has requested structural drawings of the monopole.
4. The Atlantic Group has requested grounding specifications.
5. The Atlantic Group has requested a Certified RF Analysis report.

Staff notes that the consultant's comments regarding engineering and grounding plans are typically considered at a building permits stage of development. Comments regarding facility setbacks should be further discussed in the context of the County's policies and ordinances with consideration of the currency of these documents.

### **Recommendation**

Staff recommends discussion of these outstanding issues along with an overall discussion of the ATC studies.

### **Attachments**

1. Technical Review for Taylorstown - by Atlantic Technology Consultants dated November 2, 2007
2. Conditions of Approval dated August 22, 2007

## **CONDITIONS OF APPROVAL** — *August 22, 2007*

1. The proposed telecommunication facility shall be developed in substantial conformance with the Special Exception Plat dated December 1, 2006 and revised through August 14, 2007 prepared by Damiano Long Consulting Engineers, and the Loudoun County Zoning Ordinance. Approval of this application does not relieve the Applicant of any Zoning Ordinance, Codified Ordinance, or any other regulatory requirement.
2. No permanent outdoor lighting shall be permitted on the facility unless otherwise directed by the County.
3. The applicant shall make space available on the monopoles to the County for the collocation of an antenna and ancillary equipment by Loudoun County's Department of Fire and Rescue Services if so requested. The cost of all such equipment including installation costs shall not be the responsibility of the Applicant. The parties shall mutually agree to the location of the antenna and equipment on the facility.
4. The applicant shall design and maintain the monopoles and ground mounted equipment in substantial conformance with the elevation depicted on Damiano Long Consulting Engineers plat dated August 14, 2007. The monopole shall be painted a dark green color.
5. The Applicant or its successors shall remove all unused related telecommunications facilities and ground equipment from the site, within 90 days of cessation of commercial public telecommunications use or the expiration of the ground lease, whichever occurs first, and restore the site as closely as possible to its original condition.
6. All landscaping, screening and buffering will be provided in accordance with the Loudoun County Zoning Ordinance.

**NOTE:** The applicant has agreed to a one-time contribution of \$1,000.00 for the telecommunication structures and antennas and an additional \$0.10 per square foot of gross floor area of equipment pads located within the compound for volunteer fire & rescue services. The \$1,000.00 contribution for the telecommunication structures and antennas will be paid to the County prior to issuance of the building permit for the monopoles. The \$0.10 per square foot of gross floor area for the equipment shelters will be paid at the issuance of the building permit for each individual equipment shelter.



**LOUDOUN COUNTY, VA  
TECHNICAL REVIEW**

**PROPOSED  
NEW  
150-FOOT MONOPOLE  
By  
COMMUNITY WIRELESS STRUCTURES  
(CWS)**

**CWS SITE # 102 - Taylorstown  
CMPT 2007-0005  
SPEX 2007-0012**

**Submitted by:**

**ATLANTIC TECHNOLOGY CONSULTANTS, INC.**

**A Member of The Atlantic Group of Companies**

**ATC PROJECT #: 1025-17**

**November 2, 2007**



**THE ATLANTIC GROUP  
OF COMPANIES INC.**

## **EXECUTIVE SUMMARY:**

Community Wireless Structures IV, LLC ("CWS") of Falls Church, Virginia, has submitted an application to Loudoun County requesting a Special Exception and Commission Permit to construct 150-foot monopole on property owned by James E. and Betty Jo Barker located north of Leesburg on the west side of James Monroe Highway (Route 15) approximately ¼ mile south of Taylorstown Road (Route 663) at 13514 Springhollow Lane, Leesburg, Virginia.

CWS is a tower developer for wireless infrastructure and offers co-location opportunities for eligible wireless carriers such as cellular, PCS, paging, and backhaul providers. CWS has submitted a letter of interest from T-Mobile, Fibertower Corporation ("Fibertower"), and Mobile Satellite Ventures ("MSV"). T-Mobile is a FCC licensed telecommunications provider authorized and mandated to provide wireless communications services to the Loudoun County area. Fibertower is a wireless backhaul provider currently doing a network design in Loudoun County. MSV is currently designing a network for the Washington DC market in preparation for offering a new wireless service. The Applicant is proposing the construction of a new 150-foot monopole to support service delivery in an area of verifiable lack of coverage in and surrounding the area of Taylorstown.

This report outlines the specific areas of evaluation with respect to this proposal, and this consultant's recommendations regarding the Application package as presented. Supporting and clarifying evidence regarding the suitability of the proposed design in meeting the specified coverage goals is also included.

In general, it is the opinion of this consultant that this application height can be reduced to 110' AGL vs. the proposed 150' AGL and still accomplishes all the co-location potential and coverage goals. This application should be considered for approval contingent upon the criteria noted in Section 3.0 "Recommendations" of this document.

*George N. Condyles IV*

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George N. Condyles, IV  
President and COO  
Atlantic Technology Consultants, Inc.

## **1.0 TECHNICAL:**

### **1.1 Siting**

The proposed tower site is a 60' x 80' fenced compound on an approximately 4,800 square foot portion of a 15.3 acre parent parcel. The property is zoned AR-1 (Agricultural Rural-1) and located on Tax Map 19 ((14)) (MCPI# 219-36-9624). The proposed site can be accessed from Springhollow Lane approximately one quarter mile south of Taylorstown Road and is physically located at coordinates N 39° 14' 39.84" and W 77° 34' 4.38" at a ground elevation of 510.709-feet. The proposed 12-foot wide access driveway will traverse an adjacent 4.01 acre property, also owned by James E. and Betty Jo Barker, that can be located on Tax Map 19 ((14B)) (MCPI# 219-27-3881).

The Applicant is proposing to construct one (1) 150-foot monopole with a 6' lightning rod, which can accommodate up to six (6) co-locators. The site compound could accommodate approximately 6 shelters or cabinets.

#### **Setback:**

The tower complies with the County's current setback requirement that "...towers shall be set back one (1) foot for every five (5) feet in height from the property line." [Loudoun County 1993 Zoning Ordinance, Section 5-618 (C) (3) (e)]. In other words, it is a 20% setback requirement. The Site Plan submitted with this Application shows the proposed 150-foot monopole setback from the nearest property line is approximately 90-feet, which is 60% of the height of the tower.

The nearest occupied dwelling to the monopole is approximately 600±', which is a 400% setback.

**This tower should be adjusted to a 750' setback from a residence.**

#### **Geotechnical:**

No special requirements noted.

#### **Landscape Buffer:**

The proposed tower site is located deep in the south central portion of the property; however it may be visible from residences located on the ridge line of Catoctin Mountain. The houses are located approximately at a latitude and longitude of N 39° 14' 37.7" and W 77° 33' 42.7". From Goodhart Lane the tower may be visible to 2-4 residences.

According to the County Staff Report for the Planning Commission Public Hearing dated September 17, 2007 on page 7, page 13:

"Although staff supports the buffering of the tower base and the fence enclosure, these measures will generally not mitigate the visual impact of the top half of the tower from the adjacent parcels. Planting a row of trees along the northern portion of Springhollow Drive near the neighboring properties would help filter the view of the tower and mitigate its visual impact on the neighboring parcels."

#### **Co-Location:**

While co-location is preferable to construction of a new site, with such co-location minimizing visual impact of telecommunications equipment on the surrounding area, there are currently no existing structures within a 2-mile radius on which to co-locate.

CWS has designed the proposed monopole to accommodate up to six (6) co-locations. As previously mentioned, they have submitted Letters of Interest from T-Mobile, Fibertower, and MSV.

### **1.2 Structural**

The proposed 150-foot monopole-style tower design shall consist of high strength steel and shall be in full compliance of the EIA/TIA-222-F guidelines (the accepted industry standard) for structures, which is mandated to withstand the structural loading of all appurtenances, plus additional wind and ice loading.

**Structural drawings of the monopole signed/sealed by a Professional Engineer licensed in the Commonwealth of Virginia demonstrating the tower's ability to structurally accommodate the antennae and associated appurtenances of six (6) co-locations, while complying with all applicable construction and loading standards, guidelines, and codes has NOT been submitted with the Application.**

Furthermore, in conformance with County ordinance, work at this site will remain in compliance with ALL federal, state, and local building codes and regulations if work proceeds as outlined in the application.

### **1.3 RF Exposure**

FCC bulletin OET-65 provides guidance for a licensee proposing to construct a telecommunications support structure in calculation of RF exposure limitations, including analysis of the cumulative effect of all transmitters on the structure.



Appropriate steps, including warning signage at the site, must be taken to protect both the general public and site workers from unsafe RF exposure in accordance with federal guidelines.

**Documentation of an RF exposure study is NOT included with this application; therefore it is assumed that this study has not been performed. Although this Consultant sees no evidence of unsafe RF exposure levels being generated at this site if co-location were to proceed as proposed, a certified RF Analysis Report is recommended**

RF site exposure warning signage placement shall be appropriately planned for this site.

#### 1.4 Grounding

Grounding of all structures and equipment at an RF site is critically important to the safety of both personnel and equipment at the site. Even a single component not meeting this standard places all other site components at risk for substantial damage. All structures and equipment at the site should maintain a ground potential difference of less than 5 ohms.

**A grounding plan was not submitted with this Application.**

#### 1.5 General Safety

The 60'x 80' site compound will be surrounded by a suitable seven (7) foot security fence with one (1) foot of barbed wire to prevent unauthorized access to the tower.

Additional safety measures to be placed at this site include RF exposure warning signage, site identification information, and routine and emergency contact information and FCC Registration number.

The Permit Plans should include the installation of an OSHA-approved style of fall prevention cable.

#### 1.6 Interference

Interference study, taking into accounts all proximally located transmitters and receivers known to be active in the area, is advisable prior to any new tower construction. A full interference study has not been included with the Applicant's design. Therefore, it is assumed that such a study has not been performed.

While it remains technically prudent and advisable to complete this study for any new tower construction, practically speaking this consultant sees no evidence of interference by or with this site after a general evaluation of the surrounding transmitter sites.

Should any interference issues be posed with respect to this site, mitigation would nevertheless remain the responsibility of the tower owner and affected carrier(s), and would be regulated by the Federal Communication Commission, having no effect or burden on the County.

## **2.0 PROCEDURAL**

### **2.1 FAA Study**

An initial search was performed by this consultant via TOWAIR Determination under the ASR online system on the FCC website to determine if registration is required. The TOWAIR determination results were as follows:

“Structure does not require registration. There are no airports within 8 kilometers (5 miles) of the coordinates you provided.”

### **2.2 FCC Antenna Site Registration**

This site does not yet have, nor is it required to have, an antenna site registration number. For both routine and emergency identification purposes, however, it is recommended that this site be registered with the Federal Communication Commission. All registered sites should have their registration number conspicuously displayed at the site which is normally on the security fence surrounding the compound area.

### **2.3 Environmental Impacts**

The National Environmental Policy Act of 1969 (NEPA), delineated in Title 47 of the Code of Federal Regulations, Part 1, Subpart I, sections 1.1301-1.1319, requires federal agencies to incorporate environmental considerations into their decision-making process when evaluating new construction proposals. As a licensing agency, the Federal Communication Commission (FCC) requires all licensees to consider the potential environmental effects from their construction of antenna support structures, and to disclose those effects in an Environmental Assessment (EA) that must be filed with the FCC for review.

**A NEPA Phase I Evaluation, dated April 9, 2007 and prepared by Baxter Consultants, Inc. have been submitted with the Application and indicate NO IMPACT.**

**However, it is important to note the following responses:**

**According to the response from the Department of Game and Inland Fisheries dated January 10, 2007, "This project is adjacent to a tributary to a portion of Catoctin Creek that is designated a Threatened and Endangered species' Water. This designation is due to documented occurrences of the state threatened wood turtle (*glyptemys insculpta*). Therefore, the applicant should coordinate with the VDGIF Environmental Services Section (804-367-693) concerning potential impacts to this resource.**

**According to the VDGIF Environmental Services Section response dated January 29, 2007, "Based on the scope and location of this project site, we do not anticipate significant adverse impacts upon waters known to support ST wood turtle. However, due to the proximity of this project site to such waters, we recommend that all contractors associated with work at this site be made aware of the possibility of wood turtles on site and become familiar with their appearance, status and life history. If any wood turtles are encountered and are in jeopardy during the development or construction of this project, immediately remove them from danger and move them safely to suitable habitat in or near the closest perennial stream."**

**A NEPA Phase I Report should include the following items:**

- **NEPA Checklist**
- **NEPA Summary Report**
- **Associated documentation**
  - **Figures, Drawings, Maps**
  - **Tribal Correspondence**
  - **Land Resources Map and FEMA Floodplain Map**
  - **SHPO Correspondence (See next Section 2.4 "Historic Impacts)**
  - **Department of Game and Inland Fisheries Response**
  - **Department of Conservation and Recreation Response**

The NEPA Phase I Assessment is a report that is submitted to the FCC only if requested by the FCC. Otherwise, it shall be reviewed by the appropriate locality for which the proposed tower site is being considered for approval.

## 2.4 Historic Impacts

Section 106 of the National Historic Preservation Act of 1966 (NHPA) requires that State Historic Preservation Offices (SHPO) and the President's Advisory Council on Historic Preservation be given a reasonable opportunity to comment on all undertakings with the potential to affect historic properties. The licensee is required to submit to the SHPO a detailed description of the project, a listing of local historic resources, and a discussion of any measures being undertaken to mitigate impacts (if any) on historic resources. Upon receipt, the SHPO has thirty (30) days to review and respond to those submissions. All agencies with authority to permit construction are required to consider the SHPO response in its decision making process with respect to new construction applications.

**A response from the Department of Historic Resources (VDHR) dated February 1, 2007 was submitted with the Application and states the following:**

**"This project will have an effect on historic resources. Based on the information provided, the effect will not be adverse."**

## 2.5 Supporting Documentation

CWS did include T-Mobile coverage maps supporting the co-location of their antennas on CWS' proposed 150-foot monopole.

An independent RF analysis has been performed by this consultant with coverage maps appended to this report at the following heights:

150-foot	Propagation map – Blue
130-foot	Propagation map – Yellow
110-foot	Propagation map – Orange
90-foot	Propagation map – Pink
70-foot	Propagation map – Grey

The following analysis is noted:

150-foot	to	130-foot	0% difference in coverage
150-foot	to	110-foot	5% difference in coverage
150-foot	to	90-foot	10% difference in coverage
150-foot	to	70-foot	15% difference in coverage

**It is this Consultant's opinion that the applicant will be able to meet their stated coverage objectives at a height of 110-foot.**

Supporting documentation in the form of photo-simulation was submitted with the Application.

### **3.0 RECOMMENDATIONS**

This application represents an appreciable intent on the part of the Applicant to conform to all applicable federal, state, and local regulations, accepted industry practices, and specific County ordinances regarding construction of new telecommunications towers. It is therefore the recommendation of this Consultant that the County consider the Applicant's proposal contingent upon the following criteria being submitted for review prior to final approval:

- Slight adjustment to achieve 750' setback from house.
- Structural drawings of the tower;
- Grounding specifications
- Certified RF Analysis report;

**As mentioned in the previous section of this document, it is this Consultant's opinion that the applicant will be able to meet their stated coverage objectives at a height of 110-foot.**

In closing, this consultant remains available to address any comments or questions which may arise after review of this report. Any interested party with such comments or questions may feel free to contact this firm, which remains committed to delivering independent, objective, unbiased, and thorough consulting services.

Respectfully submitted,



George N. Condyles, IV, CPM  
President & COO



**Taylorstown Road**



**Scenic By-Way**



**Approximate Location of Tower Compound looking West**



**East View of Ridge line Above Tower Compound**

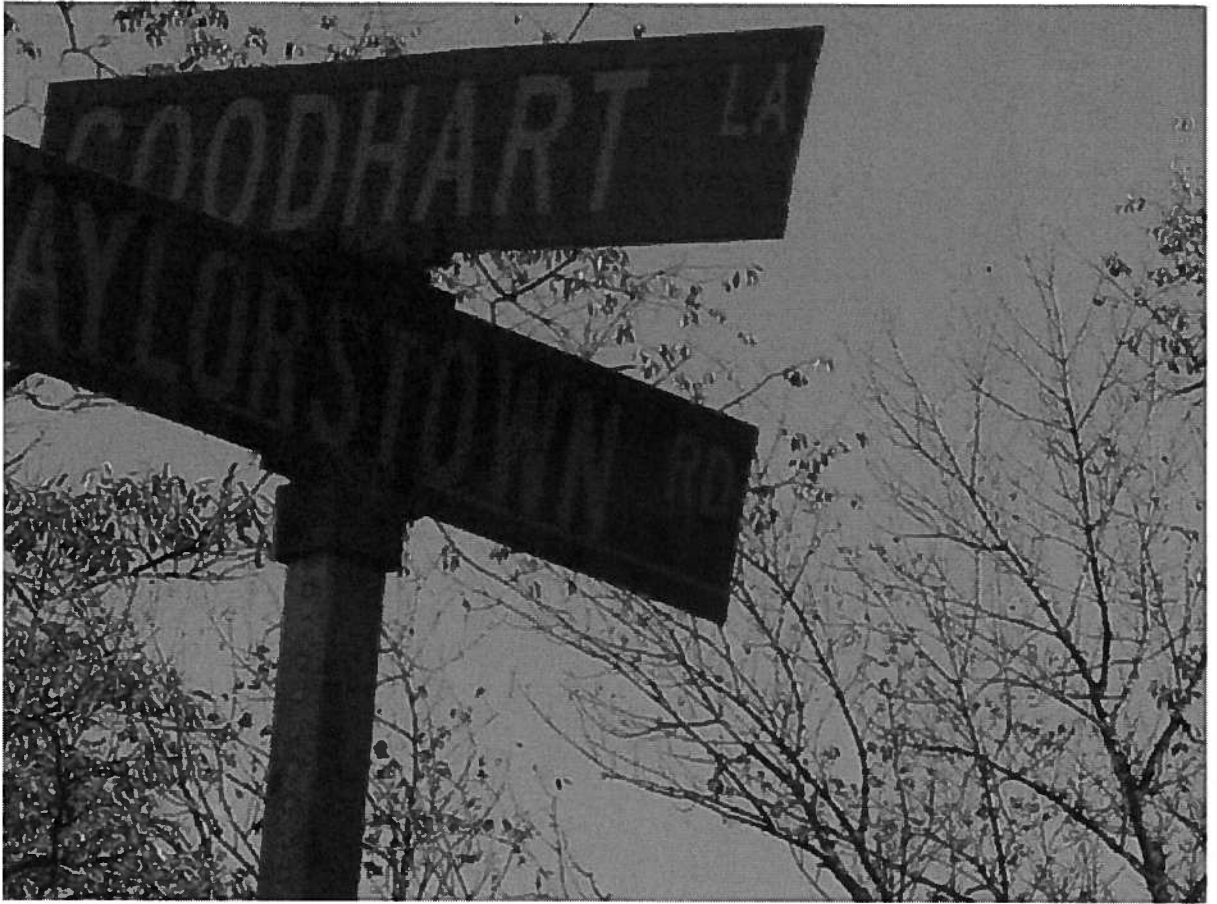




**West View**



**Taylorsville Church**

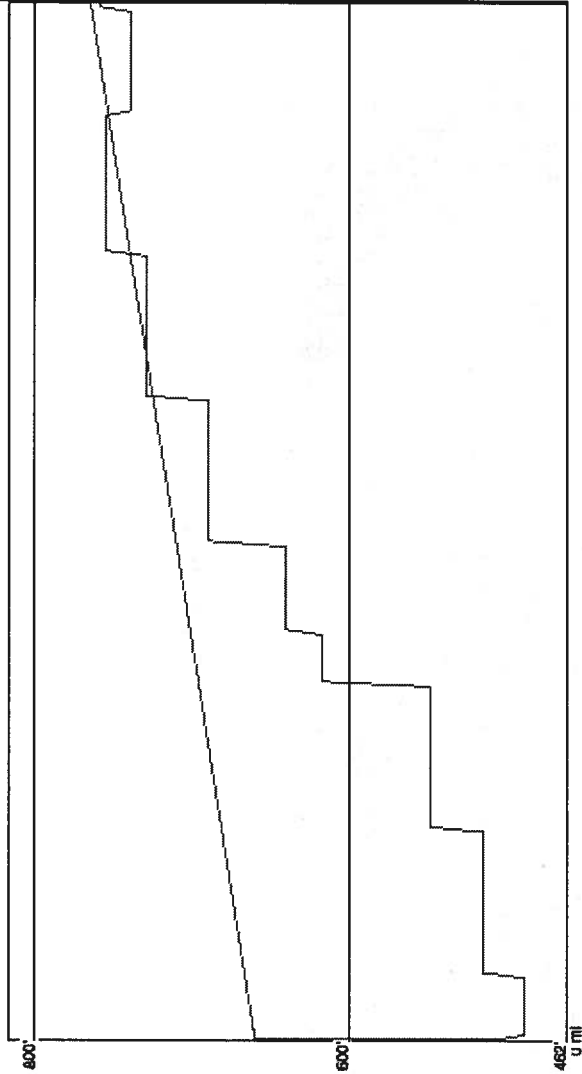


**Road Above Proposed Tower on Ridge Above**



**Home without View of Tower during foliage season**

# ComStudy 2 Path Profile



## CWS-150

Lat: 39-14-39.8 N  
 Lon: 77-34-04.3 W  
 AMSL: 510 ft  
 Tower AGL: 151 ft

## RESIDENTIAL

Lat: 39-14-37.7 N  
 Lon: 77-33-43.0 W  
 AMSL: 759 ft  
 Tower AGL: 7 ft

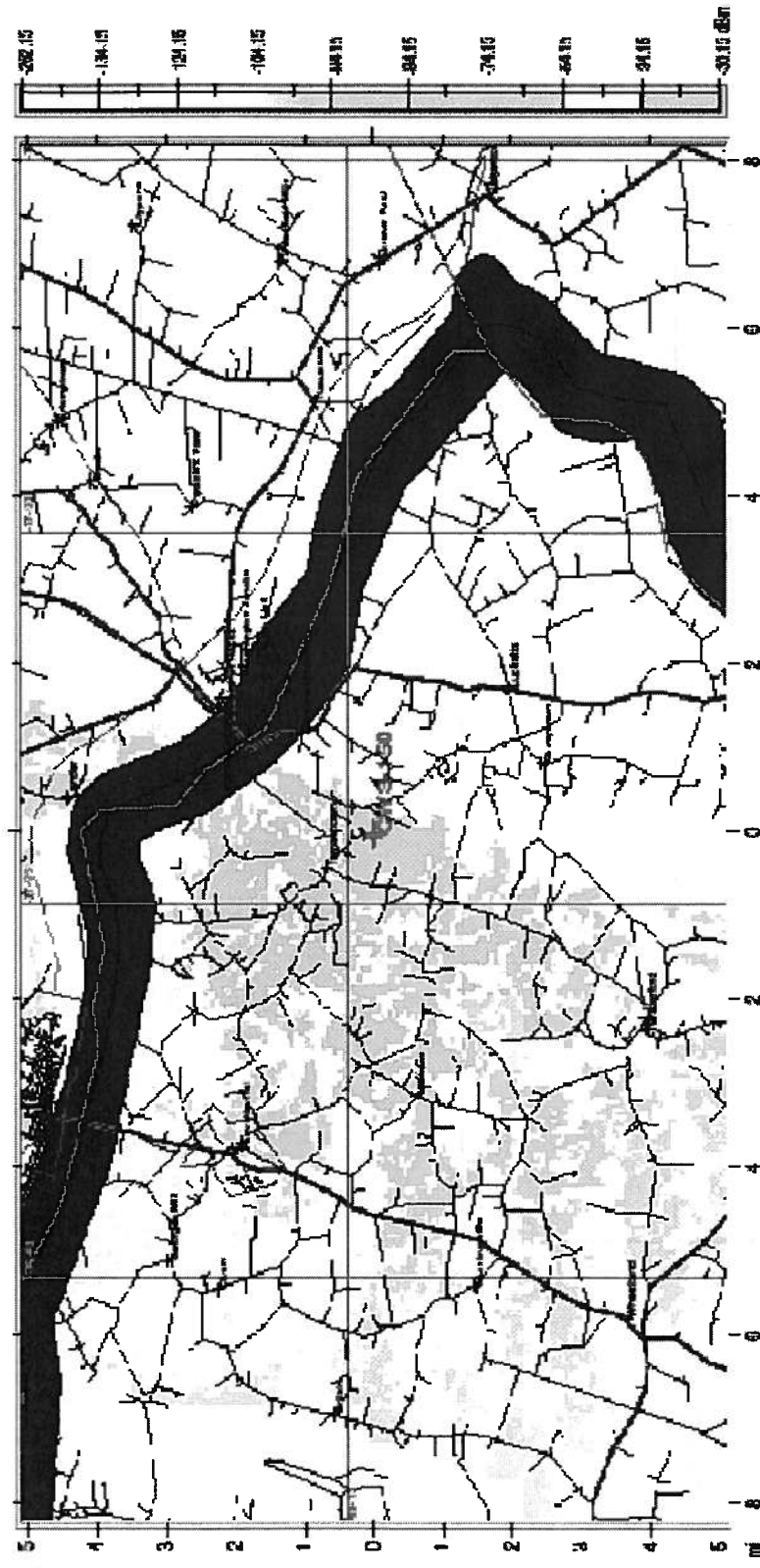
## Profile Info

Distance: 0.92 mi  
 Bearing: 97.28 deg  
 # of points: 200  
 K value: 1.233  
 Frequency: 1920.0000  
 Clearance: 0.6

## Losses

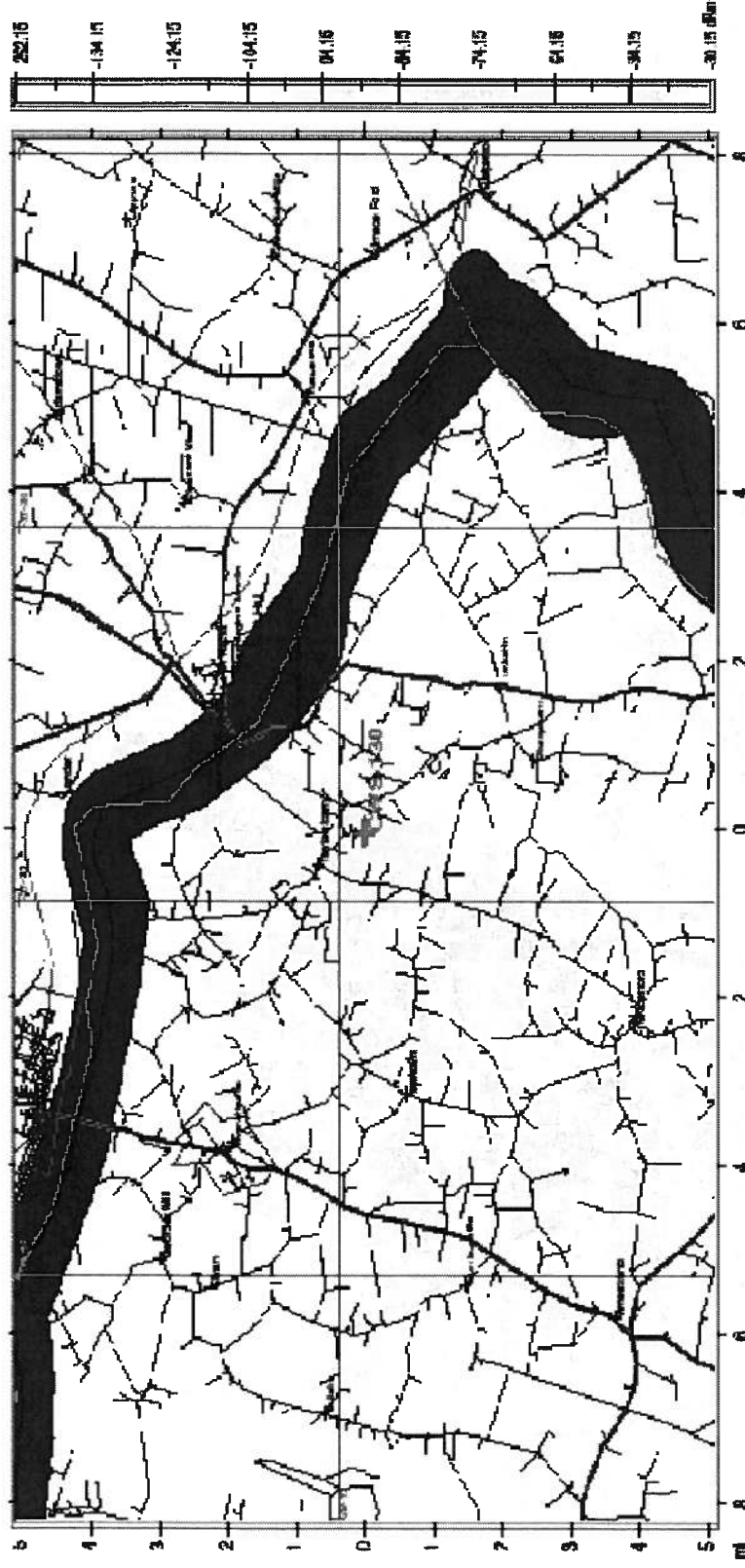
Base Loss: 67.9 dB  
 Fade Margin: N/A  
 Diffraction: 6.0 dB  
 Fresnel: 7.7 dB

# TAYLORSTOWN, LOUDON COUNTY, VIRGINIA



CWS-150 AGL TOWER

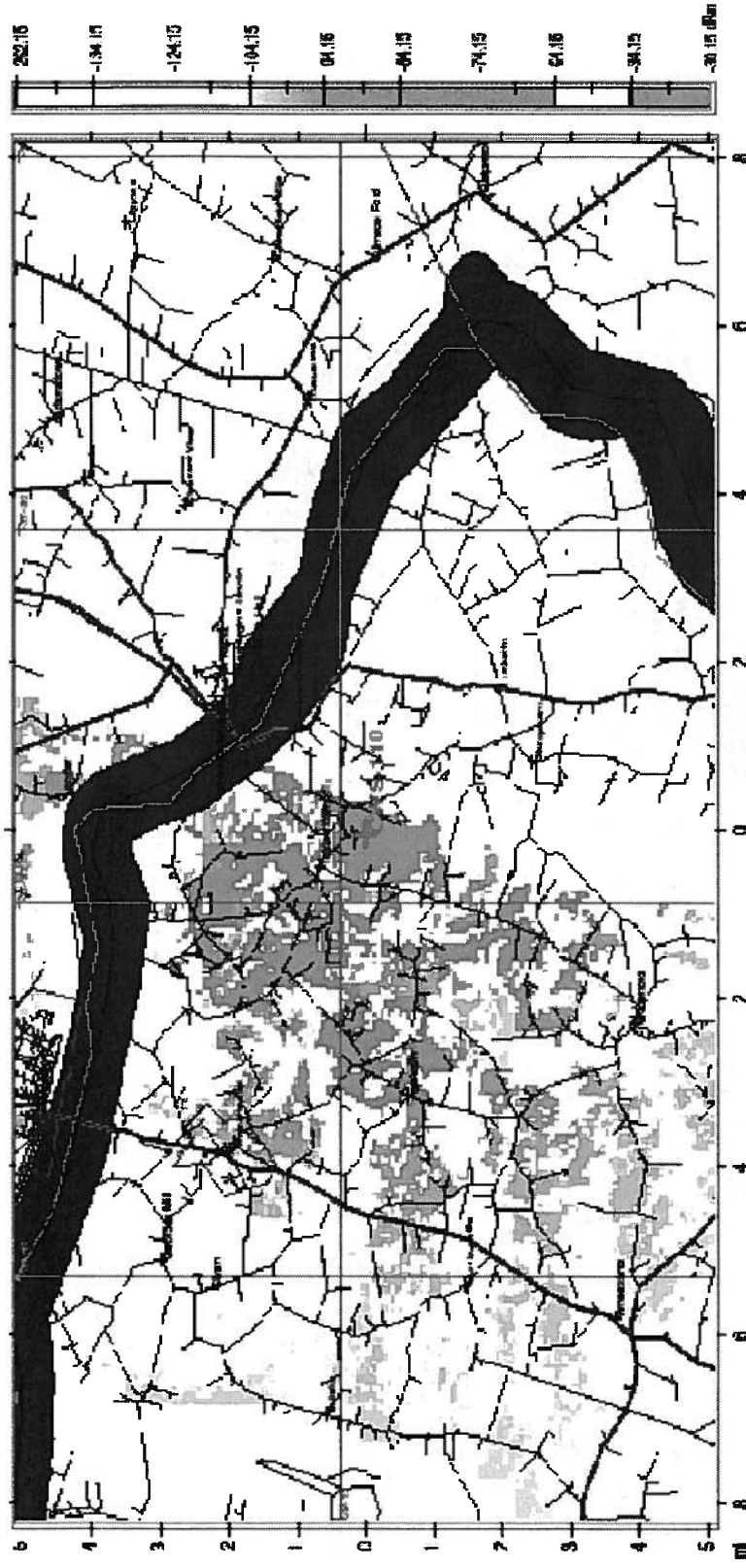
# TAYLORSTOWN, LOUDON COUNTY, VIRGINIA



CWS-130 AGL TOWER



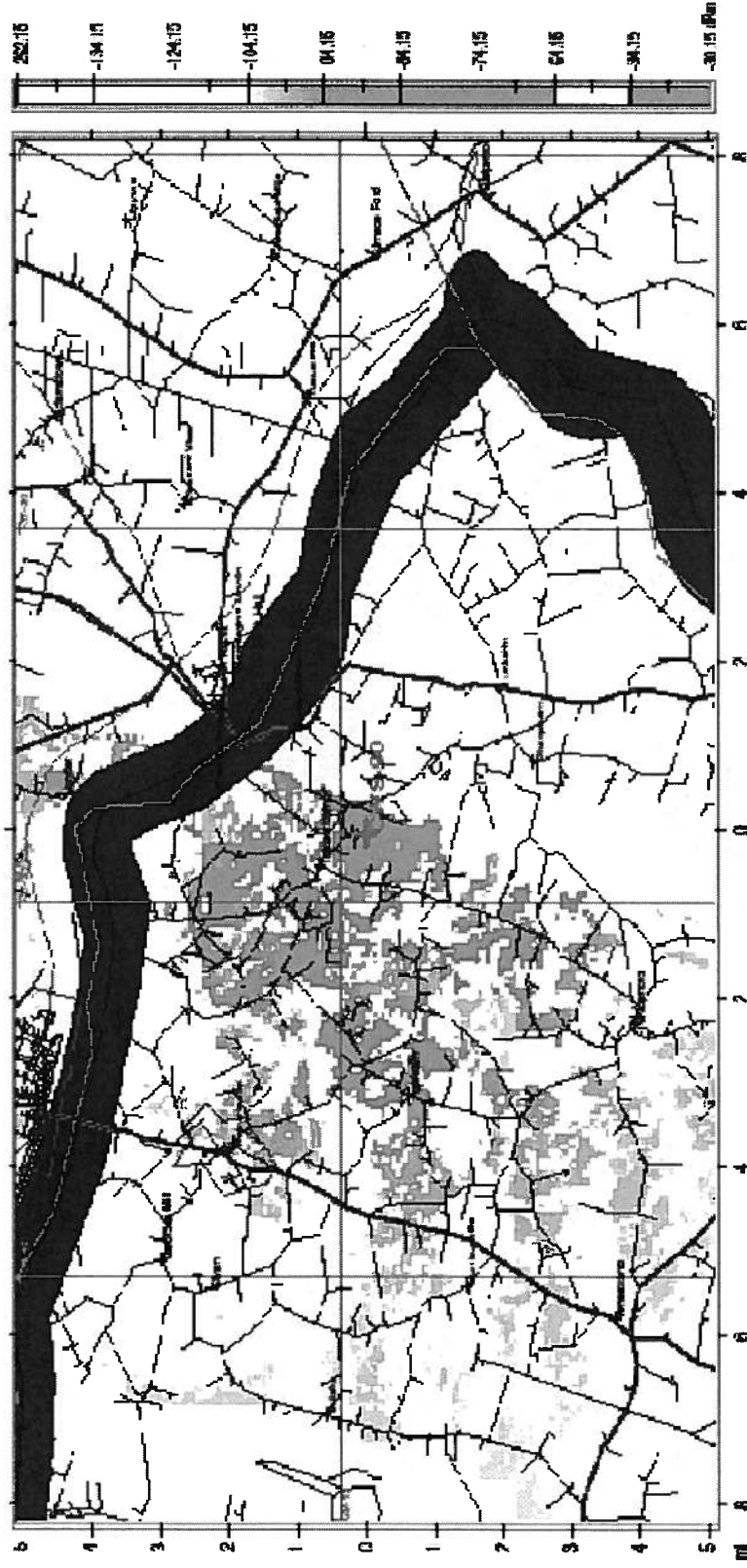
# TAYLORSTOWN, LOUDON COUNTY, VIRGINIA



CWS-110 AGL TOWER

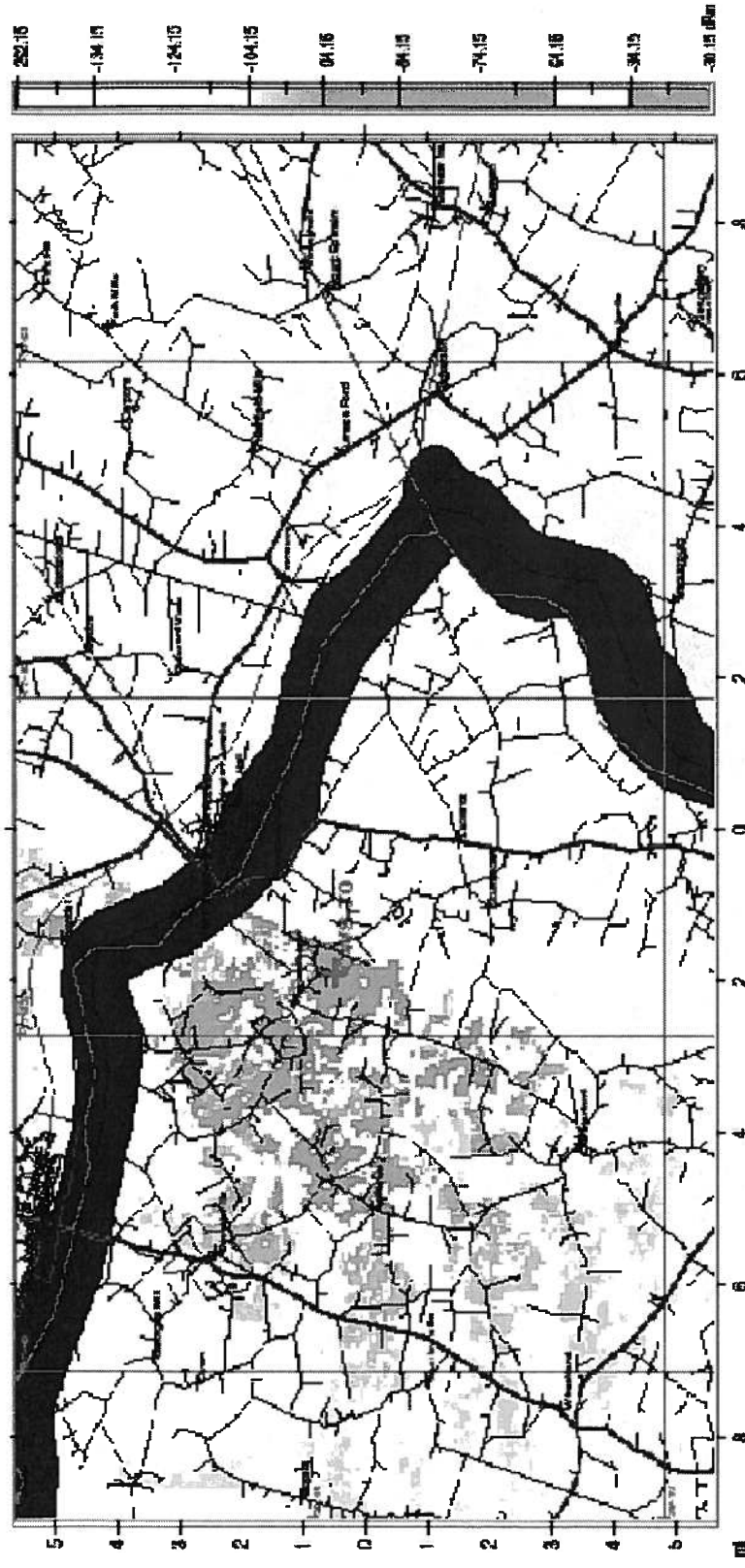


# TAYLORSTOWN, LOUDON COUNTY, VIRGINIA



CWS-90 AGL TOWER

# TAYLORSTOWN, LOUDON COUNTY, VIRGINIA



CWS-70' AGL, TOWER



## Antenna Structure Registration

[FCC](#) > [WTB](#) > [ASR](#) > [Online Systems](#) > TOWAIR[FCC Site Map](#)

### TOWAIR Determination Results

[? HELP](#)[New Search](#) [Printable Page](#)

#### \*\*\* NOTICE \*\*\*

TOWAIR's findings are not definitive or binding, and we cannot guarantee that the data in TOWAIR are fully current and accurate. In some instances, TOWAIR may yield results that differ from application of the criteria set out in 47 C.F.R. Section 17.7 and 14 C.F.R. Section 77.13. A positive finding by TOWAIR recommending notification should be given considerable weight. On the other hand, a finding by TOWAIR recommending either for or against notification is not conclusive. It is the responsibility of each ASR participant to exercise due diligence to determine if it must coordinate its structure with the FAA. TOWAIR is only one tool designed to assist ASR participants in exercising this due diligence, and further investigation may be necessary to determine if FAA coordination is appropriate.

#### DETERMINATION Results

**Structure does not require registration. There are no airports within 8 kilometers (5 miles) of the coordinates you provided.**

#### Your Specifications

##### NAD83 Coordinates

Latitude	39-14-39.8 north
Longitude	077-34-04.4 west

##### Measurements (Meters)

Overall Structure Height (AGL)	47.5
Support Structure Height (AGL)	45.7
Site Elevation (AMSL)	155.7

##### Structure Type

TOWER - Free standing or Guyed Structure used for Communications Purposes

#### Tower Construction Notification

Notify Tribes and Historic Preservation Officers of your plans to build a tower.

Note: Notification does NOT replace [Section 106 Consultation](#).

#### ASR Help

[ASR License Glossary](#) - [FAQ](#) - [Online Help](#) - [Documentation](#) - [Technical Support](#)

#### ASR Online Systems

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